How Are Population and Education Related?

Population is one of the biggest issues facing the world and global environmental efforts in the 21st century: The more people on this planet, the more resources being consumed. Here is a graphic showing global population from 1750, projected to 2050. [1] We can see that it took all of human history until the year 1800 to reach an approximate population of 1 Billion. Since then, in the 200 plus years we have been consuming fossil fuels at exorbitant rates, global population has shot up 7 times. It's speculated that by 2050 the population will reach 10 Billion.

Here we can see the effects of overpopulation on ourselves and the environment. [2],[3],[4],[5] As the number of people on Earth rises, less per capita resources are available. Food scarcity and starvation for example, will become of increasing concern. As it stands, approximately 850 Million people struggle with hunger per day. [6] Although this number has decreased in recent years, a continuation of a ballooning population will not aid the effort to provide good nutrition to the world. Similar trends are going to be seen in other areas. Forests are already disappearing at a rate of approximately 13 Million hectares per year. [7] Overcrowding and its effects (e.g. robbery, spread of disease, unsanitary conditions) will be of increasing concern as well. Perhaps most obvious, the amount of refuse generated will only increase.

Too many people are being born, and at too fast a rate. But what can we do about it? In an article published in the *Journal of Interdisciplinary History* Enriqueta Camps and Stanley Engerman show via regression analysis that elementary level education of females is the answer. [8] In their study, Camps and Engerman focus on a particular geographic location, "sub-Saharan Africa—a region marked not only by high fertility but also staggeringly high levels of infant and adult mortality." As a result, "the population in this [region] of Africa is doubling every thirty years." Historically, the higher a region's infant mortality rate the higher the level of fertility. Because disease, malnutrition, and other environmental factors result in high infant mortality rates in sub-Saharan Africa, population control in this part of the world is tricky. The eventual goal is to, at the very least, reach the population replacement level. This is the number of births per woman needed to maintain the population, not to increase or decrease it. In most Westernized countries this is approximately 2.1 children per woman. The fact that this number is not 2 accounts for the greater percentage of women born. In developing countries this number is higher, but typically around 3 or 4.

Camps and Engerman explore the relationships between several variables and population growth. These variables include per capita GDP, total population, infant mortality, female education, and ethnic fractionalization. Surprisingly, they found that income levels (per capita GDP) had almost no effect on fertility. Even more surprising was the extent to which female education *did* have an effect. "A one-year increase in women's primary schooling causes the number of children born to fall by 0.614" Statistically this dependent variable has a p-value of .01, indicating an *extremely* high correlation between female education and fertility. It therefore follows that if we are concerned with overpopulation in the 21st century and increasing rates of resource consumption and waste generation, we should be focusing our collective efforts on education, specifically the education of women in sub-Saharan Africa.

References:

[1] *http://blog.world-mysteries.com/science/the-world-population/
[2] *http://blogcapsule2009.blogspot.com/2009/12/effects-of-over-population.html
[3] *http://simple.wikipedia.org/wiki/Deforestation
[4] *http://thetechnologicalcitizen.com/?p=2991
[5] *https://www.kickstarter.com/projects/2116677151/crowded-portrait-of-life-on-a-teeming-planet
[6] †http://www.bread.org/hunger/global/
[7] †http://www.unep.org/vitalforest/Report/VFG-02-Forest-losses-and-gains.pdf
[8] †Camps, Enriqueta, and Stanley L. Engerman. "World Population Growth: The Force of Recent Historical Trends." *Journal of Interdisciplinary History* 44, no. 4 (February 1, 2014): 509–26. doi:10.1162/JINH_a_00612.
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* Indicates photographic reference
† Indicates informational reference